Tourism technology training for destination marketing organisations (DMOs): Need-based content development

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Abstract

Most DMOs are not familiar with new Internet-based technologies, and have not had sufficient opportunities to learn about and evaluate these dynamically changing technologies. Therefore, this study aims to demonstrate how educational content has developed to provide tourism professionals with basic training in new technologies, and to improve the delivery of additional training by discovering their opinions, constraints and needs regarding the adoption of tourism technology. The lack of time to learn, and funds to implement technologies, were indicated as the greatest constraints that DMOs have. Implications for effective learning and content development are discussed.

Keywords: tourism technology; DMO; Web 2.0; technology education

Introduction

Information and communication technologies (ICTs) and recent technological revolutions have deeply affected destination marketing and promotion (Bentley, 1996; Buhalis, 1998a; Buhalis & Licata, 2002; Schwanen & Kwan, 2008). In addition, explosive increases in the number of Internet users worldwide have provided travellers with diverse communication channels and new ways to acquire travel information. In particular, with the emergence of Web 2.0, Internet users play the roles of co-marketers, co-designers, and co-producers of tourism information, generating a considerable amount of content (Sigala, 2007a). Moreover, with the advent of Web 2.0, diverse technologies have been introduced that increase travellers’ access to a wide range of data, and DMOs have recognised that these new technologies are meeting the needs of sophisticated travellers (Buhalis, 1998a). Thus, DMOs and other tourism-related organisations will be at a disadvantage if they fail to adopt these new technologies (Cline & Warner, 1999; Ma, Buhalis, & Song, 2003). Law and Jogaratnam...
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(2005) indicated that only when DMOs and tourism-related managers fully understand innovative technologies and have the ability to use them can these communication tools be effective for destination promotion.

Despite the importance of keeping up with innovative technologies, most DMOs are not familiar with new technologies, and they have not had opportunities to learn about and evaluate such dynamically changing technologies (Buhalis, 1998a; Kothari & Fesenmaier, 2007; Sigala, Airey, Jones & Lokwood, 2001). Also, only scant attention has been paid to educating DMOs and introducing them to practical technologies as most studies related to technology education have focused more on higher education than professional education. Undoubtedly, it is necessary to provide DMOs with opportunities to learn new skills related to emergent technologies for effective destination marketing.

Tourism technology and learning environments

A considerable body of studies has emphasised that adoption of ICTs is one of the most important and effective ways for DMOs to enhance their ability and competitiveness. (Buhalis, 1997; Croes & Tesone, 2004; Main, 2002; Sigala, 2008; Sigala et al., 2001; Yuan, Gretzel, & Fesenmaier, 2003a). There seems to be a general consensus that tourism technology, especially that related to Web 2.0, plays a vital role in marketing and promoting tourist destinations. Moreover, for DMOs it is indispensable to learn about and adopt tourism technologies for their organisations (Govers & Bleeker, 2003). The emergence of Web 2.0 has resulted in an explosive increase of not only travel-related content, but also applications and technology for effective destination marketing (Sigala, 2008). For example, recent attempts to introduce diverse tourism-related technologies to DMOs have been made by Bender (2007) and Sigala. Sigala introduced the latest Web 2.0 technologies and their applications (e.g., tags, blogs and wikis) and demonstrated their impacts on tourism with regard to city marketing. As well as the advantages of Web 2.0 tools for destination marketing, Sigala also underscored Web 2.0’s usefulness in customer relationship management (CRM) through virtual communities where social ties between customer and DMOs can be enhanced. Also, Bender conducted an extensive review of map-related technologies and showed how other DMOs are using them for tourism promotion.

Irrespective of opportunities new ICT may provide, most small and medium sized DMOs have not become familiar with these advances and therefore have not been ready to adopt them for their organisation (Buhalis, 1998a; Kothari & Fesenmaier, 2007). Possible reasons for DMO employees’ low familiarity with new technology could be explained by two common misperceptions (Sigala et al., 2001; Strassmann, 1990): (a) because all forms of technology would be difficult to learn and implement, so technology-related works should be done by technology professionals, and (b) adopting new technologies would require a considerable cost, which is especially restrictive for small and medium sized DMOs. However, the most frequently mentioned reason would be the lack of learning opportunities (Main, 2002; Yuan, Gretzel, & Fesenmaier, 2003b). In fact, it is very challenging for small and medium-sized organisations to have their own training programmes due to the lack of qualified instructors and financial resources. The lack of funds stops DMOs hiring experts and offering off-the-job training sessions for their employees such as workshop and distance learning (Sigala, et al., 2001). Therefore, the importance of learning opportunities has been highlighted by many studies.

Even though employees’ training on new technology has been considered as one of the most critical strategies for effective destination and properties marketing (Gretzel and Fesenmaier, 2001), studies indicated that tourism organisations have not provided enough training opportunities (Airey & Middleton, 1995; Gretzel & Fesenmaier, 2004; Main, 2002; Yuan, Gretzel, & Fesenmaier, 2003b). Focusing on small and medium tourism and hospitality enterprises, Sigala, et al. (2001) found that a large proportion of tourism operators do not provide staff training on technology. Also, they revealed that self-learning and literature (e.g., newspapers) were the most frequently used training methods, and few tourism enterprises receive technology training through supplier, workshop, or distance learning. The need for ICT training was also stressed in Main’s (2002) study. Comparing the pattern of ICT use in
small and medium sized hospitality enterprises, the study confirmed that although the use of technology increased from 1994 to 2001, the percentage of employees attending ICT training remained fairly constant and almost 78% of employees never attended training programmes.

Although no studies have explored ways to design special curriculum for teaching DMOs, how to increase the level of use, and employees' familiarity with tourism technologies, the role of higher education cannot be neglected. Focusing on the context of higher education, several studies have been carried out with a perspective of ICT curriculum development to increase students' ability to use ICT in tourism and hospitality industries (e.g., Buhalis, 1998b; Connolly & Lee, 2006; Fuchs, Hopken, Mirski, Lembacher, & Ainedter, 2007; Govers & Bleeker, 2003; Lashley & Rowson, 2005; Nadkarni, 2003; O'Connor & Buhalis, 1999). The trend of recent research into students' technology learning are attempts to include industries' needs and requirements in the curriculum. Fuchs et al. (2007) conducted an extensive review of ICT and interviews with employees in DMOs, and developed an e-Tourism college curriculum which included specific requirements from the DMO sector. Govers and Bleeker (2003) emphasised a live learning environment where real projects are integrated in education to provide students with hands-on experience. They underlined “strategic courses that address IT from a strategic perspective examining how it can and should be used to gain and sustain competitive advantages rather than simply teaching IT-skills” (p. 279).

From previous studies, two implications can be drawn in terms of improving DMOs' ability to adopt new technologies for their organisations. First, there is no doubt that DMOs' employees need to have training to improve their level of familiarity with new technology. Although a diverse array of Web 2.0 applications has been introduced recently there has not been enough attention on how to teach their use to tourism professionals. Second, while most studies have focused on current students, content development for educating DMOs has been largely neglected. What students need to learn for their future career may not be equal to what DMOs need and want to learn. Therefore, effort should be made to develop content for DMOs based on their needs. More importantly, the content needs to be modified and updated regularly; taking into consideration the changing nature of Web 2.0 and the industry’s evolving reaction to it.

**Purpose of study**

This study aims to demonstrate how educational content was developed to provide tourism professionals with basic training in new technologies and to improve the delivery of additional training by discovering their opinions, needs, and constraints regarding the adoption of technological advancement. To achieve this goal, a list of innovative tourism-related technologies is briefly introduced as a first step to developing educational content, based on literature and blogs related to tourism technology. Second, through an actual training programme with DMO officials from small to medium-sized cities in a Midwestern US state, this study will ascertain their familiarity with innovative technologies, how much DMOs recognise the importance and usefulness of technology to their organisations, and what kinds of difficulties DMOs have in implementing technologies. Lastly, implications from these technologies and suggestions for future training programmes will be discussed.

**Methods**

**Development of training content**

The list of tourism-related technologies was selected using five guidelines:

1. Technologies that had been mentioned most in the literature and on tourism technology-related blogs were included. E-mails were also sent to eight tourism technology experts, including professors and tourism professionals, asking for their recommendations of useful technologies. However, because the technologies recommended by these experts related mostly to social networking, this study relied more on the literature and blogs. Four major blogs focusing on travel-related
technologies were selected and reviewed: Tourism Tide (2008), Travel & Tourism Technology Trends (2008), TravolutionBlog (2008), and dottourism (2008).

2. Technologies that require a sizable cost to implement were excluded.

3. Technologies that do not require a high level of technical skill to use were included: it is expected that DMOs could use the selected technologies with minimal instruction and practice. For example, the self-service kiosk was one of the most frequently mentioned technologies in the literature and blogs. However, a kiosk system requires great expense to hire experts and purchase the hardware, so it was excluded from the list of innovative technologies.

4. Technologies that have been recently adopted for destination marketing were included.

5. Technologies that can be accessed worldwide were included.

Moreover, given that technologies rapidly evolve, it was necessary to limit the review period for blogs in an effort to include only the latest technologies. Therefore, this study only reviewed technologies posted in the aforementioned blogs between January 1, 2007, and May 1, 2008.

Teaching process

The workshop format was chosen as the way to provide technology training for DMOs and determine what DMO officials thought about these technologies. The workshops were delivered with two goals: to provide general ideas about technologies, and to inform officials that not all technologies are difficult to learn or require considerable cost to implement. Two workshops were held in 2008, the first sponsored by the Central Illinois Tourism Development Office (CITO) in May and the second by the Northern Illinois Tourism Development Office (NITO) in November. An official letter of invitation was sent inviting regional officials in charge of destination marketing to attend. A total of 65 tourism professionals (20 from CITO and 45 from NITO) participated in the workshops.

Before holding the workshop, two additional tasks were completed to improve the effectiveness of the workshop: (a) an extensive search to find DMOs’ websites as examples where selected technologies were being used for destination marketing and (b) self-training through which the researchers tried to get familiar with the operations and applications of suggested technologies.

Each workshop lasted for 4 hours and was divided into three sections: Web-based technology, hardware-based technology, and a discussion section where participants evaluated the workshop and gave comments regarding better training processes. The Web-based and hardware-based sections included an introduction and demonstration of the technologies, examination of several websites where these technologies were being used for destination marketing, and discussion of their implications. For example, to explain map-related technologies, it was shown how the tourism industry has used these technologies and demonstrated how to upload promotional videos and pictures to Google Maps and Google Earth. For hardware-based technologies, real devices were shown and how they functioned and were being used by DMOs was explained. In the discussion section, tourism professionals expressed their difficulties in keeping up with changing technologies, and they evaluated the workshop and made suggestions to improve future workshops. At the end of the discussion section, they were asked to complete a survey.

Survey

A survey was distributed to the participants at the end of the workshop to assess their familiarity with the chosen technologies and their usefulness for destination marketing. They were also asked to evaluate the workshop’s format and delivery. The survey consisted of several parts: familiarity, usefulness, evaluation, and open-ended comments. After the workshop, tourism professionals were asked to indicate their familiarity with the presented technologies on a 5-point scale, ranging from 1 (not too familiar) to 5 (extremely familiar). In particular, questions of familiarity were asked after the workshop because participants may not have known about the presented technologies prior the demonstrations. Rockwell and
Kohn (1989) argued that a pre-test taken at the beginning of an educational programme may lead to invalid results because participants may have limited knowledge to respond accurately to the questions asked on it. Knowing the familiarity of tourism professionals with these technologies will help adjust the curriculum and teaching methods for future workshops. Moreover, participants were asked to choose the five technologies that would be most helpful to their organisation for destination marketing and promotion (Question 1) and which they would be most likely to use for their personal learning about latest technologies (Question 2). In addition, based on the literature review and discussion with DMO officials who participated in the first workshop, three new questions were added to the questionnaire: (a) DMOs’ constraints (e.g., time, money and job ambiguity), (b) needs (e.g., providing a manual, more workshops, on-line teaching) for new technology adoption, and (c) satisfaction with the workshop. Therefore, these new questions were only completed by participants in the second workshop.

Training content

Based on review of literature and blogs, suggested technologies for training consist of two main categories:

1. Web-based technologies including map-related technologies, such as Google My Map, Google Earth, and Mashup; YouTube; virtual tours; Second Life; RSS feeds; and social networking.
2. Hardware-based technologies including podcasts, compact video cameras, tracking devices, portable navigation devices and multifunction mobile phones.

Web-based technologies

Map-related technologies have been mainly developed by Google, Yahoo and Microsoft. Among them, Google provides the most innovative functions such as My Map, Street View, Google Earth and Mash-up. Unlike other online maps such as Quickmaps and the US National Atlas agency, the unique function of Google Map is that it enables users to link My Map with other travel-related content such as restaurant review, photos, and videos, making the content much richer. Google My Maps is a user-generated destination map. Google My Maps allows Internet users to map favourite locations and create their own points of interest on a map, adding descriptions and information to share with potential travellers. Therefore, the tourism industry, especially local and small businesses lacking the funds to make their own websites, can create their own niche guides with varied content that can be shared with potential travellers all over the world. The most remarkable feature of Google Maps is the function of street view that shows places from a pedestrian’s perspective (Bender, 2007). It provides a highly realistic view and virtual tour from a variety of angles (360° panoramic street-level image). Although this feature is not available for all cities in the world, the range is continually expanding. Google Earth is a virtual global programme that shows places with satellite and 3D images. It lets people fly and travel anywhere on earth to view satellite imagery, maps, terrain, 3D buildings and even explore galaxies in the sky and the ocean floor. Besides the search function, it enables people to map locations by uploading videos and photos with links to information about them. Along with Street View, potential travellers can experience the real image of the destination through Google Earth before they travel.

Mash-up is a content aggregation technology. Content from two or more applications is aggregated and combined into one integrated website. The key concept is to provide linkage to other data sources and formats (Dearstyne, 2007). Among various types of Mash-ups, one useful type for DMOs is an interactive map linked to travel-related websites to help travellers find as much travel information as possible in one same place. It provides a service that marks the locations of certain facilities, such as hotels and nearby attractions, on online maps. Along with the mapping function, Mash-up displays the seamless combination of multiple sources of content and software to create a new and valuable service to travellers (Sigala, 2007a).

YouTube is a video sharing community website based on user generated content. Users upload and share their video clips with brief stories. YouTube enables people across the
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world to experience and engage with attractions and entertainment through sharing video clips. As its popularity increases, YouTube has been recognised as one of the most effective ways for national destination marketing. For example, tourism ministries across the world are gearing up to take advantage of YouTube, creating their own “channel” on YouTube, and their promotional videos will be available on this popular video sharing website. Along with national level campaigns, as individual tourists also upload their video clips taken at a wide variety of destinations, they help future travellers learn more about possible destinations.

A virtual tour is a useful tool to provide a travel experience without actually travelling to the destination. It employs usage of a sequence of hyperlinked video images or image-based models of the real destination and multimedia support elements (e.g., sound, narration and text). In addition, virtual tours may also include panoramic images (e.g., Photosynth), interactive photos, and animation. With the continuing advancements in Internet bandwidth and computer display technology, the computer-simulated environment becomes more and more similar to reality. Given that the most significant travel constraints are time and money, virtual tours can play a vital role in saving these valuable resources. Furthermore, for DMOs and the travel industry, it helps travellers make better decisions before they purchase by providing them with vivid images of destinations (see http://www.everyescap.com/Washington-dc.aspx and http://www.senate.gov/vtoru/1high.htm, for example).

Second Life (http://secondlife.com) is Internet-based virtual world in which users take on a new persona. They may then create a new product or service (e.g. events, game, and facilities), visit other lands and attractions, meet and interact with each other through avatars. It might be described as one of type of virtual tour, but it differs from virtual tours in that Second Life does not try to show the exact same features of the destination. In addition, all networks in Second Life are implemented in real time. Tourism-related industries, especially hotels and resorts (e.g., Hyatt), use Second Life for consulting architects and their guests on how to improve their hotel design and functionality. Like You-Tube, it is being used for national destination marketing. Several countries have already launched their virtual offices for marketing and promotions in Second Life. (e.g., Mexico, Korea, New York).

RSS is an acronym for Really Simple Syndication. The basic idea is to aggregate content and information in one digital space which is updated from each different website. By using RSS feeds, people do not have to visit and revisit websites that they are interested in to check newly updated information and news. Once users put the address of websites into the RSS reader, the latest headlines or the new information uploaded in websites is automatically displayed in one place (Ractham & Zhang, 2006). For DMOs, RSS feeds can play a vital role in both retrieving and delivering information about travel. For example, officials in DMOs can use RSS feeds to keep updated about with tourism related information, such as new technologies or their competition. Also, by providing a web environment where travellers can subscribe to content and information using RSS feed, DMOs can save time otherwise needed to send promotional e-mails such as event schedules or new destination information.

According to Rheingold (1993), “social networking (virtual communities) is a group of people who may or may not meet one another face-to face, and who exchange words and ideas through the mediation of computer bulletin boards and other networks” (p. 57-58). According to the Hitwise (2007) report, Web users spend longer on social networking sites than they do elsewhere. As Internet users increasingly upload content (e.g., videos, photos and comments), websites are no longer just passive containers of information, instead being more dynamic and interactive sites. Therefore, users uploading travel-related content in social networking sites have became the co-producers, co-designers, co-marketers and co-distributors of travel information for the industry (Sigala, 2007a). Social networks are mainly based on user-generated content (e.g., videos and photos), peer-to-peer reviews, recommendations and general advice. Therefore, the most important advantages of social networks are the richness and credibility of information. Since most information in social networking sites is made not by DMOs (suppliers) but by travellers themselves, the amount and diversity of information may be superior to that published in traditional marketing.
websites by DMOs or the travel industry. Also, most social networking sites are not viewed as commercial websites, and it is likely that travellers could have greater confidence in things they read on social networking sites (Fox, 2008; McKeefry, 2008).

**Hardware-based technologies**

Podcasting refers to the uploading and downloading of audio and video files by users from websites to their devices. According to Bausch and Han (2006), “podcasting is a relatively new technology that enables users to quickly and easily download multimedia files, including audio and video, for playback on mobile devices including iPods and other MP3 players, as well as cell phones” (p. 1). The main purpose of podcasting is to distribute information and content to mobile devices such as those noted above so content can be accessed whenever and wherever the owner desires (Cebecci & Tekdal, 2006). From a tourism perspective, podcasts can provide travellers with audio or audio and video tours. As the latest mobile devices, especially iPods, are equipped for video play as well as listening, travellers can download tour files from a website and listen to and view tours, either at home prior to visiting or as a travel guide at destinations.

There is no doubt that the new generation of simple and low cost compact video cameras has rapidly increased the use and supply of rich content for virtual tours and other Internet uses. Generally video cameras are perceived as bigger than still photo cameras. The large size, heavy weight and complexity of video cameras may make travellers reluctant to use them. However, the newest models of compact video cameras are smaller and lighter yet deliver high quality (HD) recordings, and some are extremely simple to use. As the number of travellers using compact video cameras increase, it is inevitable that more video clips of destinations will be uploaded on blogs and travel-related websites.

Tracking devices are one kind of GPS technology which, like cameras, record the time an image is captured, but also record location information. Sony and Canon, for example, have released handheld location tracking devices for travellers who want to tag their photos with geo-referenced data. Then, by using map-matching software, photos are automatically displayed on the map with the exact time and location they were taken, thus freeing travellers from mapping process that requires them to remember where or when they took their photos. Some travel-related sites (e.g., http://www.story.travel.com and picasa.google.com) provide Web spaces where travellers can upload their photos with GPS information without the mapping process. From these sites, travellers can see the itinerary of other travellers, along with their photos and travel stories, and check for more accurate travelling time from one to another place. Therefore, by providing and linking to these photo Websites with GPS information, DMOs can provide travellers with more accurate destination information.

Portable Navigation Devices (PNDs) are similar to GPS devices and rely on the same basic technology. Most outdoor GPS products simply indicate the user’s location in a 2D format, and cannot indicate off-road or natural resource locations. However, using PND with interactive 3D rendering software such as Accuterra map content (http://www.intermap.com), travellers, especially national park users recreationists, can track their location with 3D format and, for example, check campgrounds, peaks, trail heads and accurate elevation information. For DMOs, It is not easy to guide travellers visiting national parks or natural-based areas due to wide range of features. However, PNDs containing location and attraction information (e.g., wildlife, historic figures and flooding risks) can play a role in explaining resources, guiding travellers, and ensuring their safety. In fact, Yosemite National Park (http://www.lowerfallsloop.com) began to provide a PND service that included video and audio tours, as well as location information to travellers, in 2008.

Now mobile phones are multifunctional: they can perform diverse functions such as Internet searching, transportation schedules, booking system for hotel and flight, and GPSs (Berger, Lehmann, & Lehner, 2002; Buhalis & Law, 2008). Among these, the latest function of mobile phones is that they have become GPS navigation devices including travel-guide services, such as real-time travel information about restaurants and hotels. Therefore, it has become very important for DMOs to provide mobile environments on their websites or at destinations.
Generally, content for mobile phones has different file formats and DMOs need to make sure that map related content and information are optimised for display and usability over mobile phones. Additionally, they need to check how their attractions appear in major map portals that operate in the mobile environment.

**Survey results**

Surveys were given to 65 participants, and 54 were completed and returned (CITO 20, NITO 34). Table 1 shows the responses to the questions regarding tourism professionals’ familiarity with the chosen technologies. On the whole, most participants were not familiar with these technologies. The mean of the summed score for all technologies was 2.07. This result supports the research by Kothari and Fesenmaier (2007) that Internet technologies have been largely unrealised by DMOs and CVBs. As detailed in Table 1, participants were relatively more familiar with YouTube (\(M = 3.06\)) and multifunction mobile phones (\(M = 2.67\)), than with other technologies such as social networking (\(M = 2.59\)) and virtual tours (\(M = 2.50\)). On the other hand, participants indicated that Mash-up (\(M = 1.35\)) was the least familiar technology, followed by Second Life (\(M = 1.44\)) and My Map (\(M = 1.59\)). The participants’ relatively low familiarity implies that tourism professionals are likely to need to learn more basic skills related to these new technologies.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Valid (N)</th>
<th>Mean</th>
<th>SD</th>
<th>Valid (N)</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>My Maps</td>
<td>54</td>
<td>1.59</td>
<td>0.90</td>
<td>54</td>
<td>1.66</td>
<td>0.98</td>
</tr>
<tr>
<td>Google Street View</td>
<td>54</td>
<td>1.78</td>
<td>0.98</td>
<td>54</td>
<td>2.23</td>
<td>1.01</td>
</tr>
<tr>
<td>Google Earth</td>
<td>54</td>
<td>2.52</td>
<td>1.059</td>
<td>54</td>
<td>2.09</td>
<td>1.11</td>
</tr>
<tr>
<td>Mash-Ups</td>
<td>54</td>
<td>1.35</td>
<td>0.83</td>
<td>54</td>
<td>1.94</td>
<td>1.05</td>
</tr>
<tr>
<td>YouTube</td>
<td>54</td>
<td>3.06</td>
<td>1.78</td>
<td>54</td>
<td>1.94</td>
<td>1.05</td>
</tr>
<tr>
<td>Virtual Tour</td>
<td>54</td>
<td>2.50</td>
<td>1.17</td>
<td>54</td>
<td>1.62</td>
<td>0.97</td>
</tr>
<tr>
<td>Second Life</td>
<td>54</td>
<td>1.44</td>
<td>1.02</td>
<td>54</td>
<td>2.67</td>
<td>1.41</td>
</tr>
</tbody>
</table>

**Table 1: Familiarity with the presented technologies**

Figure 1 shows the frequency regarding participants’ views of the usefulness of the presented technologies. For Question 1 regarding the most helpful technology to their organisation for destination marketing and promotion, YouTube (\(F = 23\)) was most frequently chosen by participants, followed by My Maps (\(F = 20\)), Google Earth (\(F = 20\)), and virtual tours (\(F = 18\)). For Question 2 regarding their personal learning of latest technologies, participants selected YouTube (\(F = 21\)), social networks (20), Google Earth (\(F = 20\)), and RSS feeds (\(F = 18\)).

Tourism professionals in DMOs were mostly willing to use YouTube, Map-related technologies, social networks and RSS feeds, both personally and for their organisation. Using RSS feeds, tourism professionals in DMOs can keep up-to-date with travel-related information. Also, during the workshop, useful tourism-related websites were introduced, and how to get and track information from these sites through RSS feeds was demonstrated. Therefore, the reason that tourism professional in DMOs ranked RSS feeds highly can be explained by their effort to keep abreast of rapidly changing technologies. Except for podcasts, participants did not rank most hardware-based technologies or Second Life highly. High cost and lack of time to use them may explain these results. Although high-cost technologies were excluded from the study, technologies such as Second Life, PND, and tracking devices do incur some costs for use in destination marketing. In fact, highly ranked technologies such as YouTube, RSS feeds, and My Maps can be employed without any investment. Moreover, tourism professionals seem to have a tendency to choose less complicated and less time-consuming technologies. YouTube, RSS feeds, and My Maps are less difficult to use in comparison to others. This finding suggests more time and detailed demonstrations are necessary to explain relatively complicated technologies.
Figure 1: The frequency on Question 1 and 2 of the usefulness of presented technologies

With regard to constraints in implementing new technologies the lack of time and money were evaluated as the most significant constraints (Table 2). Regarding the perceived importance of technologies, even though participants’ familiarity was not high, it appeared that overall, participants understand the importance of technology for destination marketing ($M = 2.24$). Regarding need for technology adoption (see Table 3), participants evaluated all kinds of support mechanisms highly. Specifically, being provided with a step-by-step manual was the need most chosen, followed by professional assistance and more workshops. In terms of evaluating the workshop (see Table 4), participants showed relatively high satisfaction in terms of information relevancy ($M = 4.41$), usefulness of content ($M = 4.39$) and knowledge gained ($M = 4.36$).

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Valid (N)</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not have enough time to learn new technologies.</td>
<td>34</td>
<td>3.59</td>
<td>1.18</td>
</tr>
<tr>
<td>We do not have enough money to implement new technologies.</td>
<td>34</td>
<td>3.26</td>
<td>1.26</td>
</tr>
<tr>
<td>I do not have the chance to learn new technologies.</td>
<td>33</td>
<td>2.91</td>
<td>1.10</td>
</tr>
<tr>
<td>Job description about who is charge in technology implementation is not clear.</td>
<td>34</td>
<td>2.85</td>
<td>1.02</td>
</tr>
<tr>
<td>I think we should hire professionals.</td>
<td>34</td>
<td>2.71</td>
<td>1.03</td>
</tr>
<tr>
<td>I thought that technologies were too difficult to use.</td>
<td>34</td>
<td>2.44</td>
<td>1.13</td>
</tr>
<tr>
<td>Previously, I did not realise the importance of technologies for destination marketing.</td>
<td>34</td>
<td>2.24</td>
<td>1.21</td>
</tr>
</tbody>
</table>

Table 2: Constraints in adopting and implementing new technologies

<table>
<thead>
<tr>
<th>Needs</th>
<th>Valid (N)</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing step-by-step manual</td>
<td>34</td>
<td>4.06</td>
<td>1.18</td>
</tr>
<tr>
<td>Professional assistance</td>
<td>34</td>
<td>3.88</td>
<td>1.26</td>
</tr>
<tr>
<td>More workshops</td>
<td>33</td>
<td>3.82</td>
<td>1.10</td>
</tr>
<tr>
<td>Providing on-line training</td>
<td>34</td>
<td>3.74</td>
<td>1.02</td>
</tr>
<tr>
<td>Building on-line community to share ideas and new information</td>
<td>34</td>
<td>3.44</td>
<td>1.03</td>
</tr>
</tbody>
</table>

Table 3: Needs for implementing new technologies
Table 4: Evaluation of the workshop

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Valid (N)</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevancy of information</td>
<td>32</td>
<td>4.41</td>
<td>0.84</td>
</tr>
<tr>
<td>Usefulness of content</td>
<td>33</td>
<td>4.39</td>
<td>0.75</td>
</tr>
<tr>
<td>Knowledge gained</td>
<td>33</td>
<td>4.36</td>
<td>0.90</td>
</tr>
<tr>
<td>Level of workshop</td>
<td>33</td>
<td>4.12</td>
<td>0.96</td>
</tr>
<tr>
<td>Length of workshop</td>
<td>32</td>
<td>4.09</td>
<td>1.17</td>
</tr>
</tbody>
</table>

In the last part of the survey, participants were asked to provide feedback to inform the next workshop. From their comments, two main themes were found. First, as expected, they wanted to have this training on a regular basis and to be exposed to more tourism-related technologies. Surprisingly, this workshop was their first opportunity to learn about tourism-related technologies. Second, they rated the workshop highly in that it provided them with a broad picture about technologies and implications for their organisation. Even though most tourism professionals acknowledged that this workshop did not give them a lot of practical hands-on experiences or in-depth knowledge about the various technologies, they said that afterwards they felt more confident about how these technologies could be used.

Discussion

As the findings indicated, DMO officials ranked lack of funds and time as the most important factors inhibiting the use of technologies. Undoubtedly, given that most participants strongly expressed their willingness to participate in more technology workshops, this type of training needs to be consistently provided to DMOs. The focus of training programmes for small and mid-sized DMOs needs to be more on introducing technologies that do not require a sizable cost and high skills to implement which, in turn, will help DMOs’ officials change their misperceptions about technology use and adoption.

In addition to such technology workshops, it is necessary to have other methods that adjust DMOs’ training needs to the dynamically changing technologies. Therefore, it is suggested that a cooperative system between DMOs and academia be created by building an online community. For example, in studies related to the e-learning environment, online communities have been shown to be an effective way of conveying knowledge, and building relationships between learners and instructors (Gretzel & Fesenmaier, 2004; Haven & Botterill, 2003; Hawela, Boyle, & Murray, 2007; Sigala, 2007b). Online communities will carry out roles as knowledge sharing spaces where educational content and step-by-step manuals are uploaded by academic fields and downloaded by DMOs; where DMOs post questions and request technologies that they want to learn; and where DMOs share their technology-related experiences and build peer support.

The role of academia seems to be obvious. First, to design technology workshop taking consideration into DMOs needs and workshop evaluation. In addition, based on evaluations from repeated workshops, at some points the workshop may need to provide more in-depth training on fewer technologies that participants indicate as the most useful for their organisations. Second, to develop content for training and to update existing content by taking into consideration requests and needs posted in the online community. The technologies that DMOs are willing to use for their organisation need to be considered as potential content for in-depth training. Thirdly, to produce step-by-step manuals including specific features of technologies, examples and ways to operate them. This plays a role in sustaining DMOs’ willingness and their acquired knowledge from workshops. An electronic version of the manual that can be downloaded from online community site is recommended rather than a hard copy version for two reasons: (a) it provides easy access to example Websites through hyperlinks and (b) given that technologies evolve rapidly, an electronic manual can be frequently updated.
Undoubtedly, the main purpose of this type of workshop is to introduce and demonstrate the latest technologies. Besides the role as a delivery method, the workshop helps DMOs share their ideas and experiences with other DMOs. For academia, the workshop plays a vital role in evaluating DMOs' familiarity and tracking the outcome of training programmes. In turn, the evaluation process enables scholars to organise workshops based on participants' familiarity with technologies (e.g., beginners sessions, sessions for advanced users).

Based on introduced content for training DMOs, three important implications can be drawn for effective destination marketing. The first is the change in the flow of destination information. The role of DMOs in traditional information flow was only to collect tourism information such as attractions, hotels and other facilities, and provide them to potential tourists through print media or website. With the traditional information flow, the range of tourism environments which DMOs can deal with is limited because the process of information collection relies heavily on DMO employees. However, with new technologies, active tourist groups play a vital role as information providers, not only to potential tourists but also to the DMOs. That is, as new paths from active tourist groups to potential tourists and DMOs are added, the range of tourism environments which the DMO can cover will be much wider than that of traditional DMOs. In addition, as potential tourists join active tourist groups after their trips, the amount of information available will dramatically increase (see Figure 2 and 3). For example, Wikitravel, a free worldwide travel guide (http://www.wikitravel.org), has a wealth of destination information, all of which is posted by Internet users. People interested in travel can check the websites and read, edit, or add information. Therefore, monitoring and adding posted information is a simple way to use this technology. Moreover, by holding contests and events with free coupons or rewards, DMOs can encourage travellers to upload their videos and photos to DMO websites, maps, and other travel-related websites.

**Figure 2: Traditional travel information flow**

**Figure 3: New travel information flow**

The second implication is linking with other travel-related Websites. DMOs must not forget why many travellers use portal travel websites such as Expedia, Hotwire, and Priceline. The answer is very simple: travellers can book all related travel such as hotels, tickets and rental...
cars, on one site. Travellers basically want all-in-one sites where they can get enough information and make purchases. Therefore, linking to other travel-related websites, blogs, and information sources plays a vital role in making information plentiful and creating all-in-one sites, thus reducing the time taken to access information.

The third implication is the importance of social networking. Travellers are no longer passive recipients of information. They search and ask for information, and read about other people’s opinions and experiences, until they find what they want, all in an effort to reduce the uncertainty of travel. Therefore, it is necessary to provide interactive spaces for social networking between DMOs and travellers, as well as among travellers themselves. Because social networking sites are based on comments, feedback, and peer-to-peer reviews from fellow travellers, these websites can be the easiest and most effective means to monitor how travellers perceive promoted destinations and what kinds of problems these destinations have. Specifically, social media (e.g., YouTube and Second Life) will enable DMOs to understand what travellers want to do.

**Conclusion**

This study explored a variety of innovative technologies that make destination marketing more effective and facilitate travel. It examined the practical implications of these new technologies for DMOs and tourism professionals, and assessed the opinion, constraints and needs of tourism professionals in implementing new technologies for their organisation through a real training programme. Judging from the results of a workshop participant survey, it was found that tourism professionals in DMOs are not as familiar with travel-related technologies as they should be. Therefore, providing basic training opportunities should be a high priority; it is suggested that there should be a greater focus on increasing participants’ self-confidence by providing a broad picture of available technologies, as well as practical knowledge. Also, it should be re-emphasised that although tourism professionals are willing to use and learn tourism-related technologies, there are few chances to learn to use them. Thus, more efforts to train tourism professionals through diverse channels in this new world of Web 2.0 should be made.

Due to the changing nature of Web 2.0 and the industry’s evolving reaction to it, this kind of educational content development related to technology may not be completed in just one study. For this reason, the current study needs to be considered as not the last stage to complete educational content development, but rather a first step.

**Limitations and future studies**

In order to introduce innovative technologies to DMOs, this study mainly reviewed blogs and literature. However, other technologies useful for destination marketing are probably available. It is also possible that certain technologies that were excluded could be considered useful depending on how they are defined or which aspect of the technology is emphasised. For example, Sigala (2008) also introduced useful Web 2.0 technologies for city marketing but the technologies Sigala introduced were slightly different from the list in this study. Another limitation would be that perhaps DMO officials’ willingness to use presented technologies will not last or lead to real adoption of technologies for their organisation because it is possible that participants were affected by our demonstration effort. Also, due to the small sample size, these results may not be representative of the situation of all tourism professionals in DMOs.

For these reasons, the following are some suggestions for future studies. First, a follow-up study should be conducted to look at actual impacts of the learning experience, such as what DMO officials do for their organisation after a workshop or what kinds of problems they encounter. Second, the technologies used in this study should be extended to include newer and different technologies. As mentioned before, technologies evolve quickly. Besides literature and blogs, other media such as tourism-related websites and technology-related newspapers can provide more information about tourism-related technologies.
Lee and Wicks (2010) Tourism technology training for destination marketing organisations (DMOs): Need-based content development

References


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